

*The MRDS Project*

# Brief Overview

## The MRDS Project


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TECHNOLOGY CENTER R3700

In the late nineties it became apparent that the Texas Instrument's Auto Radar Display System (ARDS) which was installed at 3 air bases in 1981 would not be able to last until the implementation of DATMAS around 2004. The system has been serving us well, but a rapid increase in failure has forced 2 of the 3 bases to periodically work with a spare display system remote link from another airport. Towards the end of 1997 a decision was made to replace the TI system with an interim display system. Requirement specifications were written and a call for tender submitted early 1998. The project was named MRDS - Midlertidigt (Danish for "Interim") Radar System.

Based on a thorough evaluation, the RDAF has chosen the RDS 1600 Radar Display System from

 **FLIGHT REFUELLING** Ltd.  
Digital Systems Division  
Wimborne, Dorset  
United Kingdom

The RDS 1600 Radar Display Systems were successfully installed and commissioned at the 3 air bases in May - June 2000. After a short period "shadow operation", where the old system was running in parallel with RDS 1600 for operator customization, the units went operational.

## The Manufacturer of RDS 1600

Flight Refuelling Ltd. (hereafter abbreviated FRL) is the premier company within Cobham PLC. FRL is a major supplier of specialized products and services to the aerospace and defense industries. As the company name implies, the main activity is development and production of air-to-air refuelling systems.

The Digital Systems Division's products include On-Shore and Subsea Communications, Wirefree Downhole Communications and last but not least Radar and Flight Data Processing and Displays.

The RDS 1600 Radar Display System has been developed up through the nineties, and basically an upgraded version has been issued every year. The version purchased by the RDAF is version 9.x. The most significant upgrade from version 8 to version 9 is that the software was ported from MS DO Windows NT, but also a number of new functions were implemented. Improvement and enhancement of existing functions as well as implementation of new functions is a result of their own development process as well as from customer requirements.

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The RDS 1600 is extremely modular and may consist of anything from a radar display up to a complete Air Traffic Control System including Flight Data Processing, AFTN and CCDS interface, Meteorological System's interface, Strip printing, STCA and Recording and Replay. Future versions are expected to be capable of exchanging OLDI/SYSCO messages.

FRI, do not manufacture radars, only radar display systems. Their products must therefore interface to existing radars. FRI have developed considerable experience in this field, and they have successfully interfaced to a wide variety of western and eastern style radars, primary as well as secondary, newer as older. Only if older Chinese style radars are mentioned they tend to get nervous ties and shifty eyes...

Proceed to System Architecture or return to Front Page

The above was printed out from the internet

Another internet item clarified that the use of radio wave radar does affect CCDs, and that astronomical cameras, etc. are sometimes disrupted by such radio wave radar.

Internet [http://www.cmpo.mit.edu/Radar\\_Lab/radar\\_at\\_mit.html](http://www.cmpo.mit.edu/Radar_Lab/radar_at_mit.html) had data about early days of use of radar for meteorological research. The following is quoted therefor:

"Signals were stored and averaged in a condenser that charged rapidly and discharged very slowly."

"By 1956 he had built a totally digital sweep integrator, thereby helping to inaugurate the use of digital technology in radar meteorology."

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# SpectruMM™

## CCD Detection Systems

- Fast
- Sensitive
- Fully Integrated
- Economical

### Introducing New SpectruMM CCDs from ARC...

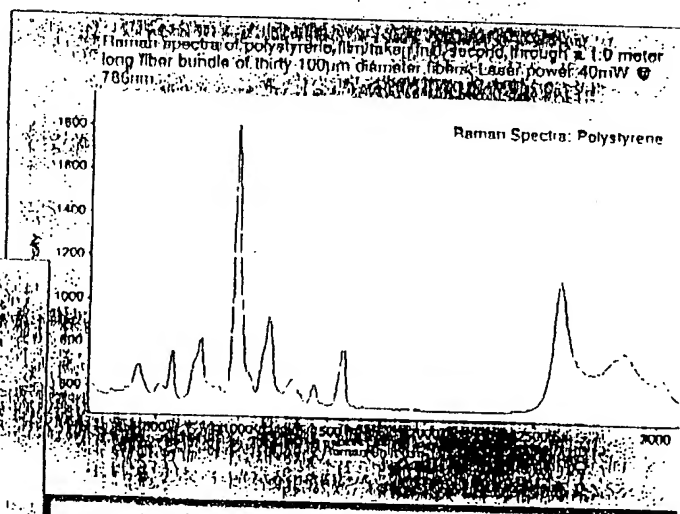
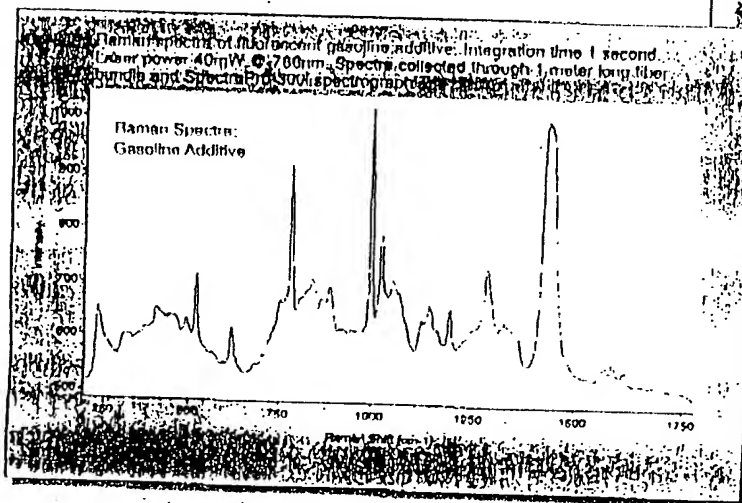
High performance TE/Air-Cooled CCD detection systems designed for optical spectroscopy, offering the ideal blend of speed, sensitivity, system integration and economy.

#### SpectruMM CCDs Feature:

- High Sensitivity. Scientific Grade MPP Low Noise CCD Chips in Front-Illuminated, UV-Coated, and Back-Illuminated (>90% QE) Designs.
- Fast Spectral Acquisition Rates: Up to 588 Spectra/Second, and 30 Frames/Second.
- TE/Air-Cooling to -35°C
- Powerful SpectraSense-CCD Acquisition and Analysis Software for the Ultimate in System Integration capabilities.
- Video Output Capabilities for Added Versatility.

### SpectruMM CCD Advantages

SpectruMM CCD detectors are extremely sensitive and offer a wide dynamic range, making them ideally suited for low light applications such as Raman, fluorescence, and photoluminescence. Spectra that would normally require minutes (or hours) to acquire with a scanning system can be captured in seconds using a SpectruMM CCD. Applications with higher light levels, such as reflectance, transmittance and absorbance can be acquired in milliseconds. Kinetic studies of chemical reactions and high speed monitoring of production processes are also routine uses of CCD detection systems. In conjunction with state-of-the-art SpectraPro® Imaging spectrographs, multiple analytical points can be monitored simultaneously via fiber optics providing an economical solution for QC and QA applications.

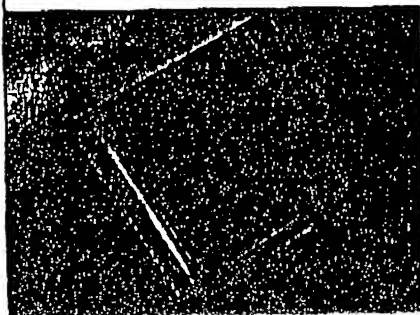


Acton Research Corporation • TEL 978-263-3584 • WEB [www.acton-research.com](http://www.acton-research.com)

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## 2k × 2k CCD Image Sensor



- 4.3 million pixels
- 24-mm square pixels
- High blue sensitivity

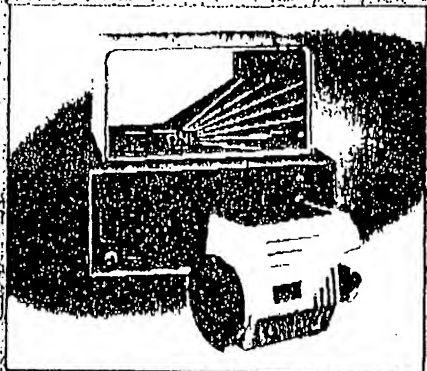
Eastman Kodak Company's large-image-area sensor is intended for medical, scientific and industrial applications. The *Kodak Digital Science™* KAF-4300E sensor has a 50-mm-square image plane; its "Blue Plus" structure provides improved quantum efficiency across the visible spectrum. Binning is available in both directions for increased versatility.

- Eastman Kodak Co.
- [www.kodak.com/go/CCD](http://www.kodak.com/go/CCD)
- Write in 164 or Reply Online

## High-Speed Line-Scan Imaging

Capable of performing 20 billion operations per second, Wintriss Engineering's OPSIS 5150ALC high-performance, line-scan camera includes powerful pipeline processing and built-in DSP analysis to assure 100% inspection of continuous (web) materials in real time. At the camera's core is a 5150-element linear CCD clocked at 40 MHz. At its highest resolution, it runs at 7500 lines per second; at reduced resolution, it can achieve speeds up to 175,000 lines per second. Image processing is provided by the OPSIS image-star pipelined processing engine, supported by a built-in Motorola Power PC. Several processing algorithms are available. Wintriss Engineering Corp., 6344 Ferris Square, San Diego, CA 92121.

■ Write in 102 or Reply Online

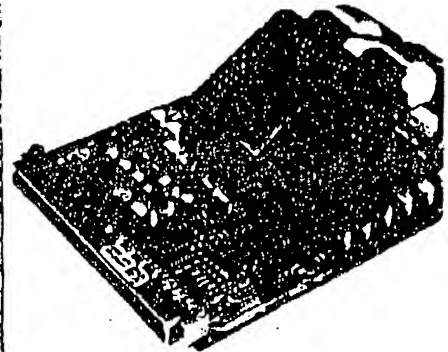


## Intensified CCD Cameras

Instruments SA has introduced a family of high performance intensified-CCD detectors dedicated to scientific and spectroscopic applications — the i-Spectrum ONE-CCD. These detectors can be gated on and off in less than 5 nanoseconds and are available with a wide selection of image intensifiers and scientific grade CCD sensors. This makes them ideal for a range of demanding applications where high sensitivity, fine temporal resolution and dynamic range are of paramount importance. Examples of such applications are time-resolved optical spectroscopy, laser-induced fluorescence, pulsed Raman spectroscopy, and plasma analysis. Instruments SA, 3880 Park Ave., Edison, NJ 08820-3012. Photonics East booth #912, Hall B.

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CCD = Charge-Coupled  
(Semiconductor) Device



## OEM Digital CCD Camera

Philips has released the FIT1011 Series — a true 12-bit, 1024 X 1024-frame transfer digital camera module for OEM applications. It consists of two boards — one supporting the Philips FIT1010 CCD sensor and second board containing a Philips patented double correlated sample CCD drive electronics, A/D converter, and power stabilization. The boards are connected by two 65-mm flex cables to ease OEM product design. The camera runs at 15 frame per second at full dynamic range and maximum resolution; vertical binning mode allows for 30 fps at half the vertical resolution. Philips Components, 100 Providence Pike, Slatersville, RI 02876.

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